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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,381	03/26/2001	Fred Buchali	Q63522	7839

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EXAMINER

WANG, TED M

ART UNIT PAPER NUMBER

2634

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/816,381

Applicant(s)

BUCHALI ET AL.

Examiner

Ted M Wang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-8 are pending in the application.

#### ***Drawings***

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawing should label all the elements in the figures. For example, in Fig.2: 5 should be labeled as logic circuit; 2 should be labeled as Decision element; and 12 should be labeled as Digital processor; etc.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description (page 6 line 17): 17 in Fig.5. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR

1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Fig.3 element 8. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the instant application in view of Du et al. (US6,307,884).

- In regard claim 1, the admitted prior art of the instant application discloses processes for recovering severely disturbed, digital, optical signals and feedback equalizers (DFE = Decision Feedback Equalizer) with converting the disturbed signals are opto-electrically, passing the electrical (page 1 lines 29-33), disturbed signals through a feedback decision circuit () comprising a threshold decision elements (Fig.1 element 2 and page 1 lines 29-35), using the decided signals and an estimated dispersion as the basis for the synthesis of synthetic, dispersive signals (Fig.1 and page 2 lines 1-4), generating an error signal with the disturbed signals and the synthetic, dispersive signals are used (Fig.1 element 10 and page 2 lines 1-11) and using the error signal to derive the setting parameters for setting the threshold decision elements (Fig.1 element B1 and page 2 lines 1-11) except specifically teaching a feedback decision circuit comprising at least two parallel-connected threshold decision elements.
- Du et al. Discloses a dual decision feedback equalizer with a feedback decision circuit comprising at least two parallel-connected threshold decision elements (Fig.2 and 7 element 140 and column 4 line 64 – column 5 line 12, and column 7 line 1 – column 8 line 13) in order to improve channel error rate performance.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the admitted prior art of the instant application's process in view of Du's disclosure in order to improve channel error rate performance.

- In regard claim 2, the limitation that the analogue control stage determines the error signal in accordance with an analogue procedure can further be taught by the admitted prior art of the instant application in Fig.1 element 10 and page 2 lines 1-11.
- In regard claim 3, the limitation that the analogue control stage operates using the zero-forcing algorithm can further be taught by the admitted prior art of the instant application in page 2 lines 11-15.
- In regard claim 5, which is a feedback decision circuit claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

8. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the instant application in view of Du et al. (US6,307,884) and further in view of Wedding (US6,295,152).

- In regard claim 4, the admitted prior art of the instant application and Du et al. disclose all of the limitation as described in the above paragraph except specifically teaching that a pseudo-error monitor compares the disturbed optical signal with the decided signal and determines a pseudo-error therefrom. Wedding discloses an optical receiver for receiving digitally transmitted data that a pseudo-error monitor (Fig.1 element 3 and Fig.2 and Fig.3, column 2 lines 60-

67, and column 3 lines 24-25) compares the disturbed optical signal with the decided signal and determines a pseudo-error therefrom (column 2 line 60 – column 4 line 13, and column 4 lines 29-59) in order to detect bit errors as a function of threshold value and phase position and adjust the parameters of the filter and the decider circuit itself to improve the bit error rate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the admitted prior art of the instant application in view of Du's modified circuit and further in view of Wedding's disclosure in order to detect bit errors as a function of threshold value and phase position and adjust the parameters of the filter and the decider circuit itself to improve the bit error rate.

- In regard claim 8, which is a feedback decision circuit claim related to claim 4, all limitation is contained in claim 4. The explanation of all the limitation is already addressed in the above paragraph.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the instant application in view of Du et al. (US6,307,884) and further in view of Alelyunas et al. (US6,285,709).

- In regard claim 6, the admitted prior art of the instant application and Alelyunas et al. disclose all of the limitation as described in the above paragraph except specifically teaching that the feedback decision circuit with analogue control stages connected to a linear equalizer.

Alelyunas et al. discloses an error filtering in a hybrid equalizer system that the feedback decision circuit with analogue control stages connected to a linear

equalizer (Fig.3-5 elements 86 and 90 and column 5 line 1 – column 6 line 11) in order to provide apparatus and methods of compensating for distortions introduced in sampled communication signals received over a transmission medium to obtain accurate estimates of the original transmitted signals, especially, in high-speed data transmission signals received over a telephone network.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the admitted prior art of the instant application in view of Du's modified circuit and further in view of Alelyunas' disclosure in order to provide apparatus and methods of compensating for distortions introduced in sampled communication signals received over a transmission medium to obtain accurate estimates of the original transmitted signals, especially, in high-speed data transmission signals received over a telephone network.

### ***Allowable Subject Matter***

10. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

11. Reference US5,031,194 is cited because they are put pertinent to an optical communication system with a digital decision feedback equalizer. However, none of references teach detailed connection as recited in claim.



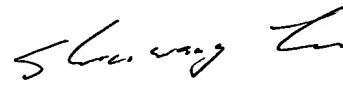
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (703) 305-0373. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Ted M Wang  
Examiner  
Art Unit 2634

Ted M. Wang

  
**SHUWANG LIU**  
**PRIMARY EXAMINER**